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to the Medical Examiners for degrees

The University

Glasgow

Subject Medical and Surgical Art and Science
known to, and practised by, Arab
Physicians and Surgeons in past ages
and at the present day throughout
Arabia

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It is so commonly believed that neither the Science nor the Art of Medicine owes anything to Arabia or its sons that I feel constrained to attempt the task of showing how deeply indebted the present age is to such men as Georgius Bachschina, Serapion, Rhazes, Avicenna, Avenzoar and Albucassis: to give these great men the names by which they are popularly known in Britain.

Before attempting to do so however, I would like to correct a mistake commonly made, of supposing that Arabia has been peopled by one large homogeneous race that originally came from a Semitic source. For as a matter of fact Caesar's description of Gaul might very aptly be applied to Arabia, seeing that in more senses than one, *Omnia Arabia est divisa in tres partes*.

Not only is its great peninsula ^{divided} into Arabia Deserta, Arabia Petra and Arabia [^]Felix; but the present day inhabitants of Arabia are descendants of three great tribes, each of which had a language of its own and told, on lasting monuments, of the height to which each of their civilizations had risen, as well as of the lands they conquered.

Ibn Khaldun tells us that the Ariba were the first and most-ancient-inhabitants of Arabia, but even they were of mixed origin being fused from the Cushites who were descendants of Ham the son of Noah and from the Amalika who were Aram descendants of Shem that had already mixed with races of lesser importance.

ii. After the Ariba came the Shamudites from the race of Ham who had already mixed with the people of Senn and with the Jafis of the tribe of Ham.

iii. Then came the Mustareba who gave their language to Arabia as a whole and by means of that language, joined to the personality of the great Meccan Sage, moulded the thoughts, transformed the lives, and turned those desert-rangers into ^{the} Ardent-propagandists of the Islamic creed who carried the tenets of their faith and the pillars of their religion into a large part of Europe while their annual fast was strictly observed in many European towns.

These Mustareba, according to Professor Sayce were made up of tribes that sprang from Jeksam the son of Eber [usually called Kahlan in Arabic literature]

and as they were descended from a Semitic Source that had received a knowledge of the true God from Abraham and Ishmael, their ancestors, there always lingered in their consciousness a sense of the Supreme being and a little knowledge of the Eternal God so when Mohamed came with that soul awaking cry "There is no deity but God" he found a people ready and willing to listen to his message.

There were however other influences at work preparing the way and making ready the people for the message that stirred them as no former message ever did and among these we must put the great Hingyaritic invasion of South Arabia which took place early in the 6th Century.

During the greater part of both the 6th and 7th centuries the Hingyarites held sway over a very large part of the Yemen and there are still Hingyaritic inscriptions to be found everywhere in the neighbourhood of Sanaa that tell us how the Hingyarites, even with their low form of Christianity, influenced the peoples' thoughts.

But long before the Hingyaritic invasion the original

inhabitants had been writing history on the stones and the rocks of the Hadramaut and its vicinity: writing it in languages that are differentiated from one another by marked phonological and grammatical differences.

The one language that appears phonologically older than the other contains fuller and more primitive grammatical forms. ^{It would seem} ~~appear~~ to have been the language of the Maeneans mentioned in the book of Job and was used throughout the kingdom that had its capital at Maean; but the inscriptions in the later dialects would appear to have been made by the people of Sanea who, on fairly good grounds, are supposed to be the people of Sheba whose queen visited Solomon and who throughout Scripture generally are called Shebeans but in the book of Job are named Sabaeans.

Professor Sayce holds that the Maeneans with all their culture and all their monuments must have flourished in the grey dawn of history and must have had a very long existence prior to the Sabean invasion as the names of thirty three of their

Kings have been preserved.

By Solomon's time however the Hanean Kingdom had been wholly supplanted by that rich and powerful Sabean realm which carried its civilization up to the borders of Palestine and had such an high moral standard that according to Professor Sayce it was easier and safer to travel through the whole extent of Arabia in those days than it is at present.

Captain W. Gifford Palgrave in his Article on Arabia in the 9th Edition of the Encyclopaedia Britannica differs in his opinion from the ideas expressed above and holds that no credit ought to be given to "those authors, who, building on the narrow foundation of Hebrew records, have included the entire nation under the titles of Ismael and Jokhan"

When however Captain Palgrave passes from the mere criticism of others to assertions on his own part he can scarcely be trusted especially as he seems to have no grounds for his assertion that the first Settlement of the pure Arab was on the extreme South West of the peninsula of Arabia

having come over from the Horn of Africa as the whole of the tradition of both Arabs and Somalis in the neighbourhood of Aden is that Somaliland was peopled by the inhabitants of South Arabia who were driven thither by the Muslim hordes that came down and destroyed the Christian Churches in Sanaa and in Aden driving ^{their} ~~the~~ members over the sea where they mixed with Haparis and Gallas of Eastern Africa and so formed the Somali race.

It seems to be generally agreed that Arabia proper is bounded on the north by a line drawn from El Arish on the Mediterranean Sea along the Syrian border to Ladnun thence East to the river Tigris and along its Western border to the Persian Gulf. And taking these lines as its boundaries one sees that Arabia not only includes the old Manæan and Sabean Kingdoms but also the Chaldean Kingdoms than which not even Egypt itself can boast of a greater antiquity.

But in the Hammurabic Code of Laws which was first promulgated in North East Arabia, something like two thousand, five

hundred years before the Christian Era we find it enacted that "if a doctor has treated a gentleman for a severe wound with a bronze lance - and has cured the gentleman's eye he shall take ten shekels of silver" (about 45-0 times an ordinary carpenter's wages of those days vide same Code of laws).

Again "if the patient be the son of a poor man he shall take five shekels of silver and if he be a gentleman's servant - the master of the servant - shall give two shekels of silver to the doctor; but if the doctor has treated a gentleman for a severe wound with a lance of bronze and has caused the gentleman to die or has opened the gentleman's eye with a bronze lance - and has caused the loss of the gentleman's eye one shall cut off both his hands".

"If the doctor has treated the severe wound of a poor man's servant - with a bronze lance - and has caused his death he shall render slave for slave; and if he has opened his eye with a bronze lance

and has made him lose his eye he shall pay money half his price"

Once more "if a doctor has cured a shattered limb for a Gentleman or if he has cured his diseased bowels the patient shall give five shekels of Silver to the doctor and if the patient be a Gentleman's Servant his master shall give two shekels of Silver to the doctor."

Alas and alack! however, it was not very long before men saw that, under such conditions of professional work, the best could not be got out of any surgeon; for while Homer was able to declare that "The man of medicine can in worth with many a warrior vie

Who knows the weapons to excise and

Soothing Salves apply" to the ordinary man life was more than meat- and ~~these~~ ^{his} own limbs of greater value than the gold offered, attended by such conditions as the law imposed.

As a result of these hard conditions the City soon became afraid of practicing the Surgical Craft or even of studying medicine.

and the Medicos' work fell into the hands of the priests whose bodies were safe from mutilation and whose knowledge of Thaumaturgic lore combined with a magician's skill often prevented them from being set upon; and helped to clear them when charged with grave offences.

But it stands to reason that the early training of these men would largely prevent them from mastering either the science or art of surgery; for the priesthood of that period were terribly afraid of touching a dead body and this fear of making themselves ceremoniously unclean would lock the gates to a study of both anatomy and physiology; while leaving open the broad road that leads to mental sloth and cursory diagnosis unstudied prognosis and empiric treatment.

The whole of their early training made them connect every kind of disease with individual sin either on their own part or on the part of others (even though in their own opinion the immediate cause was Stellar influence the work of demons, witches or even human beings).

casting on them the evil eye)

The doctrine of demonology too was early taught and, as a consequence means were sought to prevent evil spirits from getting at the person and taking possession of the individual. Charms and amulets (like the present-day "mesets") were made of all shapes, sizes and materials so as to guard against impending danger and keep away everything that would cause harm to the patient.

I have no doubt that many of these priests honestly believed in the efficacy of those charms both as preventatives of disease and as curative powers when attacked. In fact till the present day there are thousands in Arabia who join their faith to this means of averting both disease and death.

One day an Arab Assistant in our hospital fell down in an epileptic fit and his brother immediately like a frenzied man seized the nearest instrument he could lay hands on and drew a circle round the prone shaking body then pulled off his sandals and put

them under the unconscious man's head while all the while he repeated incantations and called on Allah to avert the evil before he would allow me even to put a cork in his mouth.

Later on I found out that according to local opinion the circle has always to be drawn at once to prevent the harpeys taking possession of the unconscious form. Then if it can be got easily a copy of the Coran should be put for a pillow under the patient's head as the evil spirits fear it more than hell and will not come where "the word of God" is.

Should however the Coran not be readily procurable then a pair of sandals or old shoes are to be used instead as these will somehow spurn away the djinns either by offending them through their dirt or by cheating them into supposing that they are supporting the patient's feet and not his head.

When Plague came to our village all my servants were attacked, but my house boy was attacked worst of all and when I went

to see him I found his old father who was a Schoolmaster and writer of charms hard at work on a new charm to cure his son.

Already there were over a dozen different charms tied round the lad's head, body, arms and legs but the old man was still busy making more and vainly hoping that these would cure his son.

Neither Eastern charms nor Western still did suffice to pull down the ever mounting temperature and I was compelled to lose my servant for whom, after twelve years of devoted service I mourned, as for a personal friend.

During the later Chaldean period two very different schools of thought held sway and naturally they divided the priesthood.

The one school held and taught that good spirits when properly invoked were ready and willing to displace the demon djinns or other miscreants of evil that were in possession and causing disease. Professor Lenormant says: The two gravest and most fatal diseases known to the Chaldeans were Plague and malaria

but according to the Chaldean idea these two diseases were caused by a pair of demons named Kambar and Idpa as these were the most formidable and most malevolent of the demons. An old fragment says:-

The execrable Idpa acts on the head

The malevolent Kambar acts on the life of man

The mischievous Outar acts on the forehead of man

The abominable Alal acts on the Chest of man

The mischievous Sigin acts upon the bowels of man

The malevolent ^{and} Tolal acts upon the limbs of man

Now for all these different demons there was a suitable exorcism and as there can be little doubt that Mohammed himself believed in the personality of demons there is no reason for refusing to believe the story commonly circulated in the Aden hinterland that the founder of the Islamic faith once declared that there was nothing wrong in using spells or in wearing charms or amulets so long as in these you do not associate anything with the name of God.

The other School held that though a saint may pray for a sinner a sinner must pray for

himself" and though good spirits had the power of interceding for sinful men yet nothing but real repentance and restitution could ever blot out the past sin, get rid of the present, or free the patient from the punishment that had come upon him in the form of disease. Hence the followers of that School urged upon all the necessity of confessing their sin and abandoning it as with prayer and fasting they prayed God to hear and help.

Now both these Schools have their followers in Aden and its hinterland till the present day as the following anecdotes will show.

As a rule a man is not called in for any midwifery case among the Arab inhabitants of South Arabia but the case in which I saw the following rites practised was a bad forceps case and I was called in to save the woman's life.

After the child was born the woman's mother brought a dozen of eggs to the bed side and with suitable incantation she broke one above the head so that no evil spirit should enter the brain through the sutures, then one was

The substance here used and commonly called *كحل* kohl is a black powder thoroughly levigated which is applied to the eyes by means of a short smooth bodkin like instrument - made of ivory, wood, silver or similar metal.

The quantity used in the East - is very great. In every town and village it is sold as well as the blunt-probe called *جیه* ("meel") used for applying it. One of the Persian poets - alluding to this instrument - and to the substance used for blacking the eyes says that "the mountains of Ispahan have been worn away with a bodkin".

broken beside each eye as the proper incantation was made, then being thrown to join the first under the bed. Two more were broken beside the ears. One was broken over the mouth and more than one beside each of the four limbs and the remainder were broken beside the mother's vagina and all cast under the bed.

Later on the child's eyes were blacked with "Kohl" an antimony powder that had been mixed with other ingredients after which it was taken into the next room where the father waited with the Imam of the Mosque ready to give the call to prayer and repeat the opening Sura of the Coran.

After that ceremony was over a silver amulet with the words bismillah (= ya Hafedh ya Hafedh meaning O guardian O protector) stamped upon it was tied to the child's neck.

Most children whose parents can afford it wear one or two of these silver charms often made in the form of a small box in which a properly written scroll is deposited; but as

vide Herodotus Book 1 page 197

writing paper is at a premium there I have often seen the back of an old invoice or receipt - used for writing out the scroll and it is by no means an uncommon thing to find on one side of the paper a beer or whisky tally in English and a prayer in Arabic on the other side.

When however Herodotus visited Eastern Arabia he would seem to have found a totally different state of affairs for he tells us: — "They have no physician but when a man is ill, they lay him down in the public square and the passers by come up to him and if they have had his disease themselves or have known anyone who has suffered from it, they give him advice recommending him to do whatever they found good in their own case or in the case known to them and no one is allowed to pass by the sick in silence or without asking what his ailment is"

Nevertheless this custom which Herodotus recommends as one of "the wisest of their institutions" would seem to have fallen into abeyance or to have brought about a re-action

for in the books of Ecclesiasticians we find Jesus the Son of Sirach writing "Honour a physician with the honour due unto him The skill of the physician will lift up his head and in the Signe of great men he shall be held in admiration".

"The Lord created medicines out of the Earth and he that is wise will not abhor them. He hath given the physician skill that he might be honoured in his marvellous works".

Unfortunately from their Babyfonish captivity, the Jews did, not only carry back some really good institutions; but also some that could hardly be classed as such.

Those phylacteries that were commonly used in our Lord's time, and to which he himself drew attention, were of Decadrian origin and Bishop Lightfoot says that it was from the Arabs that the Jews got possession of that idea long held by them about a fabulous bone called in Arabic "Aldecharan":—

"How dost a man recover in the World to come asked Hadrian and Joshua bin Hananiah made answer "How Luz in the Backbone". He

then went on to demonstrate how this was possible. He took the bone Leg and put it into water; but the water would not act upon it, then he put it into the fire but the fire would not consume it, then he put it into a mill but the mill could not grind it nor when it was laid upon an anvil could a sledge hammer crush it."

Strange to say, notwithstanding all the so-called quotations from Mohammed's table talk, medicine itself is mentioned only once in the Coran where honey is spoken of as such.

Moreover though it is currently believed by his followers that their prophet Mohammed knew a lot about the potency and efficacy of medicines there is only one medicine that has come down linked with his name. Senna is universally known throughout Arabia and probably in all Moslem lands as Sherbet el habi (or the prophet's purgative)

Nevertheless by common consent it would appear as if the 113th Sura of the Coran were written when Mohammed firmly believed that the attack

of rheumatism from which he was suffering had been brought on by witchcraft.

Now just about that time or shortly before it there was a large and flourishing school of medicine in Samarra the capital of the Germans but its principal had studied in India and it is generally supposed that he was a Christian and if this be really true then one can have no hesitation in believing that the Moslem World was introduced to the scientific study of the medical art by Christian teachers. For when the great-persecution broke out the very large medical school that had been founded at Edessa had its doors closed by order of the Emperor and most of its professors found their way to Sondi-Sabeen commonly called Sondisapoor where a new medical school was opened to which many Arabians flocked.

This school at Edessa from which so many professors went to Sondisapoor owed its origin to a Syrian hermit named Ephraim who having heard in the year A.D. 372 that

many of the poor people in the town were dying of starvation, went forth of his own accord to minister to their wants - and to call upon the rich Christians in the town for God's sake to come and help in the succouring of their needy brethren.

As a result of this appeal a large hospital with about three hundred beds was opened in the public gallery of the town.

But when Ephraim died no one was found sufficiently worthy or with a sufficiently inspiring presence to carry on the work, and retain the people's confidence, so the hospital was closed.

There may however, have been other reason for the closing of the hospital as just about that time there was a revival of the old teaching of the newer Chaldean School which held that - since disease usually followed in Sin's train nothing but real repentance coupled with a really genuine effort - to live a pure and holy life would ever remove disease.

Basil a well known monk of that period went everywhere preaching and teaching that since it was impossible in the great majority of cases, to trace the origin of any one disease to nature, bad habits, or vicious indulgence it was just possible that disease was sent in order to glorify God and consequently it was wrong for the children of men to seek unto Physicians, as Aisa did, instead of unto God.

"There could be no doubt about it" said he "that many diseases came upon mankind as a judgment from God and a punishment for sin while others were permitted to distress mankind so as to test their faith; as Job's faith was tested to see whether or not they would maintain their integrity as he had maintained his.

God's name had to be glorified, he declared and if the Lord willed disease for any one for his glory as he had willed the man's blindness which the Saviour cured and concerning whom his disciples asked the Lord saying Whodid

sin this man or his parents - that he was born blind, then surely to use medicaments - in such a case was to fight against God — an idea that is still prevalent among the so-called Puritans of Islam who argue that since pain is a divine ordinance it ought not to be interfered with but stoically borne. Hence some, although I am glad to say the number is getting smaller, refuse to have an anæsthetic administered lest they should interfere with the divine purpose of their Creator.

how it was in the realm of possibility for such teaching as this to have killed all scientific study, and for the time being at least, to strangle every attempt made for the re-organization of the medical profession. But an event happened which speedily changed man's view point and so removed the ban which had been placed on the practice of medicine.

Bishop Herosius when appointed to the See of Constantinople began a series of lectures on the Christian faith that rent the Church in twain while it forced the more thinking part of the community to turn its attention from mere

quibbles about the meaning of the Greek word *Θεοτοκος* and the possibility of Mary the mother of Jesus Christ being Mary the mother of God to matters that were more mundane especially as every new thought was branded as heresy by the Orthodox party who rigorously persecuted and prosecuted every one holding views ^{contrary} to those expressed by the "Fathers" of the Church as interpreted by the Orthodox party itself.

As a result of this controversy many noble minds turned their attention to medicine and before long the old hospital at Edessa was re-opened and the Medical School was established there which lived on in Gondriapoor. For though its life at Edessa was very short and full of vicissitudes till it was finally broken up by the Emperor's order in the year A.D. 489, yet the Emperor Zeno by his hard tyrannical act gave the School a new life in a new home as nearly all the teachers fled to Gondriapoor where they speedily made a name both for themselves and for their School.

Taught by persecution themselves, and longing

vide Witherington's medical history
from the Earliest times page 126

for freedom to give utterance to their thoughts; their range of view was widened till they took in the best-teachers of any Subject: no matter what their faith or creed might be so long as they knew the subject they were going to teach better than any other person. Consequently it was not very long before Pagan philosophers were on the teaching staff and taking an active part in the theoretical and clinical instruction of the pupils.

Soon many of the best and most notable of the Greek Authors were being translated for use in that School which culled Knowledge from every source and searched for truth in all directions.

Their Pauline hatred of Sectarianism also staggered - the Roman Catholic historians of those days as they record the fact with amazement that at Gondisapor these lay medical men asserted their right to vote for a Patriarch for the Eastern Church just as the Bishops and Presbyters did in the Western Church.

Now it was to this School that Harab- bin Kaledan went for his medical training and there can be little doubt but that, while he

was acting as Chief Physician to Mohammed the founder of Islam he greatly influenced that Meccan Sage in his dealings with the Arab tribes which came under his sway.

Moreover such a man as he was, was bound to exert an influence over Mohammed's mind when dealing with the Christians and their religion. Indeed I have no hesitation in saying that a great deal of Mohammed's toleration towards the Nazarene tribes of Arabia was due to the fact that Harith bin Kaledan, whose upright and earnest honest-Christian character he respected, was his medical adviser rather than a man who truly believed that he was the prophet of God sent to abrogate previous revelations.

Consequently I hold that Harith bin Kaledan deserves far more recognition than has ever been accorded to him as it was undoubtedly his influence on Mohammed and his sterling integrity in the midst of corruption which ^{has} caused even the strictest teachers of Islam to admit that ^{"the faithful"} may lawfully follow both the precepts and example of their great leader in consulting and following the advice

Vide the Sydenham Society's translation
Prayers on Smallpox and measles
page 80 para 2

of a truly Christian physician; as this is a concession on their part which brings thousands to mission hospitals throughout Arabia, India, China, Java and other Moslem lands.

It was also at Soudisapoor that the first medical examination was held which gave authority to those passing the examination to practise as physicians with a proper certificate thus differentiating them from the quacks and mountebanks so scathingly censured and vituperated by Rhazes in his book *Al-Mansur* VIII-27

Of course those early physicians made many mistakes and it is hard to see how with their limited knowledge it could be otherwise.

Nevertheless at Soudisapoor Pharmaceutics were first differentiated from Therapeutics and it was there ^{Soudisapoor} a diploma or certificate to practise which first gave the regular physician that social standing which ~~ever since~~, to a greater or lesser extent, he has ever since enjoyed.

Among the mistakes then commonly made was that of diagnosing practically every disease under the sun from wrocopy.

Vide Bacon History of Medicine

Page 223

^{up} Thabet bin Koria diagnosed a case hidden beneath the ribs and in front of the pericardium not from its local symptoms nor from its general effect upon the body but from a single glance at the urine. "I showed him my urine in a glass and he saw there what was hidden beneath my ribs and pericardium" To him the concealed matter "appeared as a stain on a polished sword"

Even in those days, however the physicians gave considerable attention both to the pulse and to the temperature. Consequently whenever any new medical combination was made its effect upon the pulse and the temperature was carefully noted and the empirical knowledge thus gained was of considerable use when the subject was more scientifically studied. At any these observations paved the way for further research and sowed seed for the reapers that were to come.

In doing our best to form a just estimate of the work of those investigators

however it must never be forgotten that they were Orientalists with all all an Orientalist's love of display. None of them had the ability to sit down and work out his subject into the minutest detail in the way that such men as John Hunter, Paracelsus, Lord Lister and Ronald Ross have done to mention only a few of our Western workers.

The Gondisapoor School assuredly did a lot for the advancement of learning but it cannot be said that the golden age of Medicine came till the 8th Century when the Caliph Al Mansur summoned Georgios bin Bachbushina (جورج بن بابشوما) to Bagdad to be the principal of that School, after that he had cured him of a severe illness.

Whether this was the Georgios so often mentioned by Rhazes in his memorable works on Measles and Smallpox or his father it is impossible now to say but most assuredly he was one of the great family of Bachbushina who for more

than two hundred years acted as Physicians to the Caliphs of Bagdad.

When thus summoned to a position of respect, Georgius left the Gondisapor School under the charge of his son and taking with him one of his favourite pupils, he proceeded to Bagdad where the Caliph received him with every mark of honour and being much impressed by his noble bearing gave him a present of three thousand dinars and three beautiful slaves but Georgius immediately returned the slaves with the most polite thanks, and when questioned as to his reason for sending back those three lovely women he replied that it was not lawful for a Christian to have more than one wife. An answer that raised him higher in the Caliph's favour than ever before.

After spending a considerable time at Bagdad he was seized by a severe illness and begged permission to return to his family that he might see his children and be buried with his fathers in his native land.

Permission was reluctantly granted after

the Caliph had done his best - to get him to become a Muslim, enforcing his desire with a promise of Paradise

To all the Caliph's inducements - Georgios had one reply:- Of a truth I am well content - to be where my fathers are whether they be in Paradise or in Hell.

On his leaving Baghdad his son was called to take his place and for more than three hundred years the Baebistina family taught in the Medical School and were famous physicians in the town where the teachers were allowed private practice and where they received a salary from the State of 240 dollars per month.

Among the later descendants of this family was Baebistina bin Surgis who cured Haroun Al Rashid of a very severe form of headache that had long distressed him. His son Gabriel also added lustre to the Baebistina name by bleeding Haroun Al Rashid when he was suffering from an ^{apoplectic} epileptic fit - and by doing so cured him.

Later on the family would seem to have gone over to Islam as just before finally disappearing from the pages of history one of the Bachtishua descendants who died in the year A.D. 1058 is called Abou Saad bin Obed Allah. But with his death there came oblivion to all other descendants.

Another famous teacher of that period was the Christian physician Abou Zakareyyah Johanna bin Massawceyah commonly known as Mesne the Elder. He was a man who was greatly respected and very much celebrated for his facitiousness.

On one occasion it is said that a priest - went to him and complained of being unwell in his stomach. "Use" said Mesne the Elder "the Electuarium Suisianum" "I have done so" replied the priest. Then said Johanna "use the Electuarium Dia - cynum". The man thereupon replied: "I have already taken some pounds of it". He then ordered him to take the Pentadion to which the priest replied that he had already

drinks a whole vessel full. Then you must use the Confectio Ambrosia said Johanna but I have already done so in large quantities was the priest's reply. This.

This made Johanna angry and he said to the man that if he wanted to get well he would require to embrace Islam for that was good for the stomach [? on account of the annual monthly fast of Ramadhan]

It was this physician [Meme] who first labored the use of strong purgatives and urged the use of laxatives in their stead. Yet even he fell into the error of supposing that Small pox was first a fermentation of the blood - that took place to a greater or less degree in every human being at one period or another in life - An idea that still prevails among many Arabs of the present day and if I am not mistaken also among the Parsees and other natives of India as a most distinguished Parsee gentleman whom His Majesty the King Emperor has twice honoured with titles once told me at a meeting of the Aden School

Committee that he had always been under the impression that Small pox was a fermentation that was almost sure to come at some period of life or another and that therefore it was better for a child to be exposed to it early and get done with it. "like measles and whooping cough".

Housain bin Isahak Ab-Ishadi more commonly known among Western peoples as Idrissides who was a Arabian teacher and the Court physician of the Caliph. ^{He} was one of Mesud the Elder's pupils and later on became an equally well known teacher although he was mostly known for the beauty of his translations which were so valued that it is said that he generally received for them the full weight of the manuscript in Gold.

Then came Serapion who lived in the 9th Century A.D. He belonged to a mercantile family but having a taste for learning he became a famous physician concerning whom Rhazes thought sufficiently highly to quote his opinion in his book on Small pox and measles thus:—
Serapion says as soon as the symptoms of

Smallpox appear let the patient lose blood either by the lancet - or if his strength be much reduced by means of cupping glasses.

It is a pity that one cannot be sure whether or not this is the same Serapion ^{the one who} as ^{the one who} taught that Phtisis pulmonalis was occasioned by the flow of certain humours from the head into the lungs where they set up organic disease in the air tubules and thence spread to the other bodily organs. It is also unknown whether or not this is the Serapion who for the cure of dysentery advised the use of boiled milk into which a red hot iron had been thrust - as milk mulled porter; because though the Arabic manuscript omits the word son from the text - the Latin version speaks of *Lilius Serapionis* which may or may not be the proper reading.

No one must, however, confuse him with the author of the work *De simplicibus medicamentis* who is generally called Serapion junior as Serapion junior lived in the 11th century of the Christian Era.

Still less must he be confused with

Scorapion of Alexandria who lived in the third century before the Christian Era

About Beten Mohammed bin Zakariya
Ar-Rhazi commonly called Rhazes was the
first Muslim Arab to distinguish himself
as a physician. He was born at a
town called Rai not very far away from
Chorasan somewhere near the middle of
the 9th Century of the Christian Era although
the exact year of his birth is unknown.

It is said that in his youth Rhazes was very fond of music but when he reached the age of manhood he ceased to manifest interest therein and gave all his attention to study.

In Rai his teacher was ابو الحسن علي بن سهر
Abu Hasan Ali Ibn Sahl Sometimes called
Ibn Rahn ابن رين الطبري who was the
son of a Jewish physician and had been born and
educated at Tabaristan hence called At Tabari.

Having been forced by the troubled state of his native country to take refuge in Rai. There he had Phages as one of his pupils who was very fond of

and
vide page 45 vol 1. The Healing Art-
Rhazes on Smallpox &c. notes and
illustrations page 137

quoting his old master especially that saying of his "an ignorant physician hastens death."

After completing his course Rhazes began attending the sick and composed a large number of books on medicine although according to Abul Feda and Ibn Khallikan he was more than forty years of age before he began to study medicine. Then he was appointed physician to the hospital of his native town but was afterwards removed to Bagdad.

Despite his busy life he managed to put in a good deal of travel and it is said that he visited both Jerusalem and Africa while Leo Africanus vouches for it that once while passing along one of the streets of Cordova he saw a big crowd gathered round a man's body who was said to have fallen down dead in the street. As soon as Rhazes saw him he commanded him to be beaten all over with rods but especially on the soles of the feet with the result that in less than a quarter of an hour he was fully re-animated.

When questioned about this singular

Vide page 139 notes and illustrations Rhazes

"Truth and certainty in medicine is an aim which is not to be attained; and the healing art as it is described in books is far inferior to the practical experience of a skilful and thoughtful physician"

remedy Rhazes replied that he had seen it used with success in a similar case by an old Arab consequently he had tried it - as "for proper treatment experience is of more use than a physician"

Strange to say on my voyage home from Aden in the month of July 1920 the Chief Engineer of the S. S. Clan Rofs told me of a similar case that had happened on board his ship

On coming through the Red Sea one of the firemen was taken up out of the stove hold senseless and on taking his temperature I found it was $107^{\circ}6^{\circ}\text{F}$ So I had him laid flat on the deck and the hose turned on him till his temperature fell to 100°F at the same time I gave him an enema to move his bowels. With the evacuation of his bowels and the fall of temperature he partially recovered but several days passed before he fully recovered his senses or was able to return to work.

Talking over this case with the Engineer he told me that on another occasion one of the firemen had fallen down apparently dead but the Chief Serang came along and unloosing his belt belaboured him with it for a considerable

Encl. in 1926. Unrecorded
For cataloguing &
Subject index

(given to me by
Miss Mc Ilwraith
today)

28.4.60

She says bookplates
were not used
then & there
were no accession
nos.

As I found it in
his house

line, then the man gave a gasp rose and returned to his work apparently none the worse for his attack or for the novel form of treatment that was adopted in his case.

Ibn Khallikan in his monumental work tells us that Rhazes was by far the ablest and most distinguished physician of his day. "A perfect master of the art of healing skilled in practice and thoroughly grounded in its principles and rules"

Pupils went long distances for the benefit of his tuition and many of his aphorisms are worthy of notice even till the present day. The following are worth quoting:— At the beginning of any disease choose those remedies or measures of treatment that have no tendency to subvert the patient's strength and where you can cure by dietary you had better leave drugs alone. "Where simple measures are sufficient do not use complex ones. It is not reading that makes a physician but a critical judgment, and the application of well known rules to special cases."

It was also characteristic of his teaching that he set a greater value upon an accurate description of observed facts, than upon any theoretical speculation as to the cause. He also expended far more care upon diagnosis and upon prognosis than upon treatment.

He was the first physician not only to describe *Spina bifida* but also to say that one had to look to constitutional causes for the presence of glandular suppurations; and unlike most, if not all, of his contemporaries, he never fell into the error of over-estimating the value of uroscopy.

It was however in and through his famous monograph on Small-pox and Measles that he rose into fame and managed to reach that place which justly belonged to him not only because of the fresh mind that he brought to his subject but also because of his original way of looking at every question. e.g. He tells how being called once to see a man that had acute fever as the result of travelling on a hot day: his face was red and his breath was

as hot as fire while his heart beat violently. I waited said he for an hour or two expecting to see some flow of blood but nothing happened so I ordered his nose to be rubbed violently. Still however there was no bleeding and the fever with accompanying pain continued to increase so I gave him ten pounds of cold water to drink and this was soon followed by marked diuresis accompanied by a fall in temperature and full recovery. His servant however who got no water because all were busy with his master, died before morning.

It is to Rhazes that the honour belongs of introducing the more extensive use of chemicals into the practice of medicine. He used Antimony and Arsenic extensively as well as Copper lead mercury and Zinc salts in the preparation of ointments and of eye washes. He also used Sal Ammoniac in the removal of corneal opacities which had been left by small pox and gave directions for the internal use of brandy borax and Saltpetre.

It was probably when studying the use of these chemicals and their different compositions that he was led into the by paths of alchemy for Ibn Juljul quoted by Ibn Khallikan tells us that he prepared for the Caliph Al Mansur a treatise in which he endeavoured to establish the certainties of Alchemy.

Al Mansur was greatly pleased with the work and gave him a thousand dinars for a reward. But in doing so he told him that - he wanted him to put into practice the theory that he had so clearly stated in his book.

But Rhazes rather demurred at being asked to do so saying that it was a task for which large funds would be necessary and a great many instruments; retorts - &c. of various patterns together with aromatics of feminine quality. The operation too he said would be attended with great difficulty as there would be so much technique required and every thing down to the minutest detail would require to be done according to the rules of art.

Upon this Al Mansur replied that every

instrument and everything else that he required to make the thing a success would be given to him. All, he said, would be supplied in order that he might carry out and put into practice the principles that he had expounded in his book.

When Rhazes saw that the Caliph was in earnest he still hesitated to undertake the task and at last confessed his inability to carry out his own scheme. Whereupon Al Mansur said "I would never have thought that a philosopher was capable of such deliberate deceit while preparing a work which was to be given out as a scientific treatise on a subject which was certain to engross peoples attention and make them start out on a labour from which they could derive no benefit".

"I have given you" said he "a thousand dinars as a reward of your visit to me and for the trouble that you have taken in preparing the treatise but now I am going to punish you for your deliberate deceit" and saying so he struck him on the head with a whip and sent him off with a store of provisions

for his journey

It is quite possible that this blow was the cause of the Cataract - from which he is said to have suffered and from which his absolute blindness ultimately came ; but as certain writers attribute his blindness to the quality of beans that he ate and as the Arabic name given to the disease from which he suffered

الجل جزي literally the descent of the humours on the standing still of the fluid, and as there was accompanying pain in both eyes which were equally affected I am rather inclined to think that the disease from which he suffered was glaucoma as that disease is even more common in Arabia till the present-day than Cataract is and I am all the more convinced of this as Rhazes would not allow the surgeon to operate on his eyes

But as his friends continued to press him to have the operation performed he called in the Surgeon and asked him how many membranes the eye had and when he could not tell him he silenced both his friends and the Surgeon

by pointing out to them, and to the Surgeon who was prepared to operate, that either the Surgeon had not had sufficient experience for him to trust himself with his hands or else he had profited so little from his past experience that it would be unsafe to trust him with such a delicate operation.

Of course "they are lifeless who are faultless" and Rhazes had his faults like other men but even when he jumped to "a lightning diagnosis" he was always able to give a sufficient reason or at any rate a plausible reason for acting as he did.

One day while he was out-walking with some of his pupils he met a madman on the road who stopped and looked more fixedly at him for a little then burst into a loud fit of laughter. But no sooner did Rhazes reach home than he took a dose of dodder of thyme and when his pupils asked him why he did so he replied that it was because the madman laughed as he looked at him. "For said Rhazes 'he would never

have done this had he not seen in me some traces of the bile with which he himself is oppressed

In Surgery as well as in Medicine Rhazes held a conspicuous place especially in the treatment of eye complaints and his knowledge of the operative branches thereof was most excellent for the period in which he lived.

He knew how to operate on trichiasis Entropion and Ectropion. He also knew how to extract a cataract by Suction, to do a tracheotomy, tonsillotomy and how to deal with a lachrymal fistula as well as with fistula in Ano.

He could reduce fractures and dislocations by means of machinery and he gave lengthy details about the way in which to treat abscesses, burns, necrosis of bones, and caries.

He even recognized a fracture of the penis and gave a detailed description of harelip and how to operate for it.

His gynecological and obstetrical remarks

relate to resorption of the uterus and to hydrops, to mole pregnancy, to the shaking of parturient women and finally to embryotomy for the relief of labour.

When he thought that venesection was necessary he always opened the vein in the longitudinal direction and in cases of hepatitis he preferred to open the vein of the right arm rather than the left - although in haematemesis he usually opened the veins of the foot.

His semiology and prognostics are famous with the exception of those derived from indications seen in the planets - or in the patient's urine.

As a Muslim he was debarred from dissecting the human body but even in this department he made great progress as he was the first that even mentioned the double recurrent nerves or the infra trochlear branch of the nasal and the trigemini.

He also said that children were the product of the mixture of the male and

female seed declaring that male children were born when the male seed preponderated and was stronger, but that female children came when there was a preponderance of the female seed.

Abdulla bin Sina commonly called Avicenna is said to have surpassed Rhazes in all forms of learning and his reputation not only as the prince of physicians but also as a philosopher would make him out to be a veritable Admirable Crichton. So very great was the extent of, and so extremely varied were his, precocious attainments.

In fact till the present he stands unrivalled among men of the early and middle ages except for Hippocrates and Galen while among the Arabs and perhaps ^{among} Moslems generally he stands an easy first. For not only did he write about Medicine and teach that subject, but pupils gathered from a wide circuit, sat at his feet, and drank in his teaching

about Logic, morals, metaphysics, Astronomy, Philology, Mathematics, Natural History and Theology.

During his stay at Hamadan he was Chosen to be Chief Physician to the Sultan, and, taken on, he was raised to the dignity of Vizier; but as he refused an invitation that was sent to him by Sultan Mohammed of Shiraz asking him to visit his capital and as there was a very great likelihood of his being taken thither by force he withdrew to Isfahan, where the splendour of his reputation continued to increase till it far out-distanced that of all his rivals. While from that time forward no physician was classed along with him during the rest of his life or even for long centuries after he had died.

Unfortunately he was not only a writer of and lover of Books but also a lover of alcoholic beverages and it is practically certain that his early death

was due to his libulous habits. In fact we are told that though he had a most excellent constitution he so impaired it through his love of strong drinks and of those vices that are everywhere found in the train of drunkenness that he died of an interstinal inflammation at the early age of 56 years.

Like all great men he has had his own share of praise and of blame but there can be but little hesitation in accepting as a really great man one who for nearly 600 years had his precepts followed and his books accepted as the principal text-books of practically every medical school in the world whether in Europe, Asia or Africa. Especially when we remember that even till the present day he is quoted by every well known author that writes in the Arabic language.

His chief work was the Canon and it was not very long before it-

superseceded the works of both Rhazes and Haly Abbas while it made even the works of Hippocrates and Galen take a secondary place for a time.

Perhaps, however, the position which he came to hold in the estimation of his fellows can be partially accounted for, by the learned way in which he discoursed on the exciting, predisposing, and proximate causes of disease that were mentioned by Galen, while at the same time he dwelt upon and discussed the material formal effectual and final causes of Aristotle as he sucked the best from these and the rest of his predecessors.

One belief that he strongly held was that by the administration of gold, silver, and precious stones, the blood of man was cleansed and purified in a peculiar ^{way} from all its own putridity and there can be little doubt but that it was owing to the prevalence of this idea in the minds of men that apothecaries

get into the way of filding and silvering their pills.

Perhaps however the most original thinker among the Arab physicians of those days, with the single exception of Rhazes, was Abu Merwan Abdul Melik ibn Zoar generally called Avenzoar.

It was he who first taught that gastric cancer is caused by, or at any rate greatly aggravated by, the use of most improper food.

His works contain much that is not to be found in earlier writers; for not only does he describe pericarditis and mediastinal abscess; but he may even claim the distinction of being ^{the} first to observe accurately and describe minutely the Acarus Sabiae. "Sometimes" he says there arises in the body just under the external skin a number of little swellings which the vulgar call "Coat" and if the skin be removed there issues from these little swellings a little

beast - so small that it can scarcely be seen by the human eye". "However through the grace of God there are many things that will cure this disease".

He does not mention Sulphur although some modern dermatologists would have us believe that it was from some form of Leprosy of this description that Ismael suffered when he came to the prophet Elisha and that the prophet being alive to the nature of his complaint sent him to the Sulphur springs of Jordan in order to rid him of his complaint even while his changes of raiment gave the disease to ^{Elisha's} his servant Gehazi.

Averroes however though he does not mention Sulphur in any form, advocates the use of the oil of bitter almonds as a certain cure for this complaint.

Abou Kassim Khalif bin Abbas Ezzahri, or Albucasis as he is usually called by English writers, was a Spanish Arab of Cordova. He was also the

from which the first hernia has been dissected; this owing to the previous use of the cautery was so matted together that it was impossible to make out the different tissues, but the mass was dissected up to the middle line, when it was found to be the bladder. The inner coat was then freed and tied by a purse-string suture, covered over by the freed muscular coat, and finally covered by the peritoneum and returned to the abdomen. The patient made an uneventful recovery and was discharged cured.

The interest in this case lies in there being a double hernia which came out of two different ruptures, yet was found matted together in practically an inseparable mass with the impossibility of recognising the bladder, because of the man having been cauterized several times by the Arab Hakims of the district to which he belonged. It is also a note of importance that about 95 per cent. of the hernia cases were found previously cauterized. Branding appears to be the first and the foremost treatment for a pain, or for any swelling, in the hands of the Arab Hakims.

A CASE IN WHICH THE BLADDER WAS A CONTENT OF THE INGUINAL CANAL.

By Y. V. CHABUKSWAR,

Crater, Aden.

ADEN CIVIL HOSPITAL has the privilege of getting from the interior many Arabs suffering from hernia. Among 56 successful cases operated on by Doctor John C. Young, M.B., C.M., D.T.M., the Acting Civil Surgeon, the case under reference is of rare occurrence and of some interest to the profession. I therefore publish this case with the kind permission of the operator Doctor John C. Young, for which I am much thankful to him.

On 5th January, 1920, an Arab, aged 30 years, was admitted to this hospital, suffering from an impacted hernia, with the whole of the surface of the tumour covered with cauter marks. On the same day the patient was put under chloroform, and the hernia was cut down upon, and the sac was with great difficulty freed from its adhesions, tied, and removed in the usual way; then it was found that there was still another impacted hernia

*during the
operation that
he acted as
Civil Surgeon before
his paper was
prepared*

first great Arab Surgeon whose name has come down to us and his book Al - Lasrif contains a lot of useful information about the formation and method of using many of those instruments that have been adopted by modern surgeons e.g. the probe and the Silver Catheter for males.

Among other things he speaks of is, the use of the actual cautery for all kinds of pain and inflammatory swellings. An instrument, as will be seen by a former assistant's notes, that is still in common use throughout the whole of South Arabia.

He also speaks of the way in which to ligature the arteries and warns all surgeons against the danger of amputating higher than the knee or the elbow.

He also gives directions for the performance of laparotomy and tells his readers the proper way in which to operate on hard lips Cataract - and fistula.

Vide Withington pages 156 - 157

He was the first writer to describe a case of Haemophilia:—"I found" said he "men in a certain village who told me that whenever one of their number suffered from a severe wound it bled until he died and they also added that when one of their children rubbed his gums they began to bleed and continued to do so till the child died".

Then having described this case he goes on to say in his monograph that he had never seen such a case anywhere else than in this village and that even among the most ancient writers he had never seen such a case described, declaring that he could not discover any cause or adequate reason for this peculiarity nor tell how it was to be cured although he was under the impression that if the actual cautery were properly applied that it would stop the flow of blood but admits that he never tried its use in such cases, concluding his remarks with the statement that this

disease was a most remarkable one.

His great medical works ran into thirty volumes; but of these the last is the most important; as it is the first illustrated work on Surgery that was ever published and consequently its publication marked a great epoch in the history of Medicine.

Though a strict Modern he advocated the study of Anatomy and began his own treatise on Surgery by saying that the Science and Art of Surgical Bandicraft was in a bad way owing to the practitioner's lack of knowledge of the anatomical structure of the human frame; and goes on to tell how he had seen a Surgeon, while trying to excise a scrofulous swelling in a woman's neck, plunge his knife into the cervical artery, and how the poor woman had fallen back dead, into the Surgeon's arms.

As I have already said it was he, who invented the probang, the Silver Catheter, the lachrymal probe and

the "gold" needle still used by oriental surgeons in "conching" for cataract as well as the surgeon's knife that is used for resection.

He also ^{mentions} many other kinds of surgical instruments all of which, I am given to understand, have been illustrated in the Escurial manuscripts.

He concludes his great monumental work with the following caution saying: —
"Avoid perilous practices as I have warned you, for in this way you shall have more peace and profit too; if God wills it."

Coming down now to present-day practice as carried on by the native hakems in and around Aden, I find that the books most frequently consulted and upon which the great majority of those rely, is the work of "The Sheikh, The Imam, The Learned Worker and Skilled Seneslogin- Ibrahim bin Abder Rahman bin Abou Bakr El-Azrak" whose book was originally published in Cairo, Egypt in the year A. H. 1276

which corresponds with the Christian year A.D. 1860. The extracts however which I give below are translations from the Edition that was published in the year A.H. 1326 corresponding with our year A.D. 1908.

Of course, like all the old Arab physicians, this writer begins his work by describing the four humours of the body and goes on to tell us that when the Spleen has the predominance it causes dryness of the eyes and of the whole body. It also causes sleeplessness and great thirst combined with constipation and a rumbling of the bowels associated with black thickened blood. Moreover any enlargement of the Spleen causes a marked increase in the number of troubled thoughts together with pain in the Splenic region.

The urine too becomes thick in such a case and has a blackish red colour perturbing the patient so badly that he has fearful visions in his sleep, especially of the dead, while, even when he is

awake he feels so miserable that he avoids all company.

Now this disease comes from food that is too salt- or sour; although it may come from such food as beans, lentils, pulse, and other things of that nature; but God knows best.

He declares that no patient ought to walk or work immediately after food and says he ought never to do so when he is hungry; but the partaking of Saffron along with his food will greatly help him as it dyes the urine and purifies the blood.

One good test for discovering the nature of the disease from which the patient is suffering is to pass a quantity of urine into a clear glass vessel, then to let fall a drop of oil into the centre of the surface, when if the disease be of a hot-nature the oil will spread out to such an extent that it will cover the surface whereas if the illness be of a cold nature it will not spread out so as to form a superficial cover.

After exhausting the subject of the four humours, our author goes on to give the following advice "When a doctor is called to see a patient that is suffering from two different kinds of disease at the same time he ought to attack the more dangerous of these two diseases at once; even if the medicine that will cure the serious disease happens to be injurious to the lesser malady; as when he has cured the more dangerous disease then he will be able to give his undivided attention to the lesser malady."

At page twenty he treats his readers to a couple of traditions in regard to the use of honey ^{and} of its value as a medicine.

"One says that upon a certain occasion a man went to Mohammed and spoke to him thus:—"O Apostle of God my brother's stomach is out of order" and he replied "Give him honey to drink" and the man went away to do his bidding. Then he came a second time and said "I have done as you told me and it has increased the disorder"

To this the prophet replied: - "God is true and your brother's stomach is false. Give him more honey to drink". Then the man went away and did as the Apostle commanded him to do and his brother was cured.

If however any one objects to this story and says that all doctors are agreed about the laxative power of honey consequently it ought not to be prescribed in cases of diarrhoea; then say that there is something in medicine at one time that is not there at another time and it is quite possible that his attack of diarrhoea was brought about by a surfeit of food as this often gives rise to diarrhoea."

"So the apostle of God - may blessings ever rest upon him and give him peace - ordered the man to drink honey and it increased the diarrhoea because the stomach was not clean but when he gave him more honey then the material of the surfeit perished and the diarrhoea stopped"

At page 43 the Sheikh devotes a whole chapter to the use of false electronics.

and the proper way in which to use these for curing any Cold Sickness, increasing the Seminal fluid, strengthening the Kidneys, curing diureis, removing all symptoms of dyspepsia, clearing up the complexion, making the power of vision greater, for sharpening the intellect, removing the phlegm and taking away forgetfulness and helping the memory as well as for curing all sorts of Coughs and Colds.

Then at page 54 he gives a list of vegetables and plants - which help to strengthen the Stomach. First he puts Melongena the egg plant; for although as he says it is not good for nourishment it benefits the Stomach and so strengthens it that it digests whatever food is supplied to it.

Shehri frankincense too will warm and strengthen the Stomach if a small quantity be regularly taken after food.

Caraway Seeds do greatly benefit the Stomach when three dirhems of them are regularly taken for seven days.

Cold water is good for the stomach but it must not be drunk immediately before food nor by anyone who has a weak stomach nor by anyone who is suffering from spleen, jaundice, dropsy, or haemorrhoids.

Water in which there is a quantity of iron (Ferruginous Spring water) is good for relaxing the stomach and when certain preparations of iron are thoroughly pounded and properly mixed with other things the combination makes the stomach strong.

Musil-Aloe Wood - When a "Cafak" and a half of this is taken it strengthens the stomach, brain, bowels and muscles opening the obstructions and evacuating tainted and disturbing moistures while it corrects cold humours.

Hot water . The drinking a lot of hot water cleanses the stomach but weakens it and God knows best.

A little further on he says that hot-water should be taken before food as

it - washes away all Superfluities from the Stomach and so purifies it - that - all kinds of indigestion are removed and goes on to say that nothing better can be employed.

The use of Salt - also puts - away the sticky phlegm of the Stomach and eyes - all moist - Superfluities that are found in that organ.

At page 87 he treats his readers to a Chapter on Medicines that - help against - certain forms of belching and act - as a certain cure for the other forms thereof.

"Know" says the Author "that - Sour belching - only comes to a person from one or other of four causes" viz: - "Coldness of the Stomach a Collection of phlegm an over - abundance of food in the Stomach or from the food being cold when it - is partaken while there is not - a sufficient - supply of natural heat - left in the Stomach to warm it - and kindle it - into action. It is just - like putting damp wood upon a small fire."

Moist Coriander seeds, when eaten at the end of a meal, stops sour belching; while cloves, mastic, Shaha frankincense and thyme tend to stir it up.

Among medicines that are good for the liver he puts - Camel's milk, Cinnamon, and figs, if they are eaten with pepper.

Among those that are bad for the liver however he puts - bananas, which he says are so heavy on the stomach that they produce both bile and phlegm. And he goes on to say that - Lentils cause constipation; as they thicken the blood and make it - to flow sluggishly.

All sorts - of milk he says are bad with the exception of Camel's milk; as they cause constipation and even water, when taken to excess, will cause constipation and a sluggish circulation.

For dropsy he prescribes linseed internally but - lays greater stress on such external applications as Old Cheese, pounded

frise, and mixed with water, then firmly bandaged — over the affected part.

Salt and resin when crushed together and made into an ointment are good, and so is pigeons' dung when mixed with vinegar; but cow's dung, when properly smeared over the part, is beneficial.

Then he goes on to give the following list of foods which may be partaken of by dropsical patients: — Lentils, millet, barley, corn, cheese, haricot beans, and vinegar while Camels' milks, goats' milks, and She-Ases' milks, are also all food.

Of fruits the following are those of which dropsical patients can partake liberally. The pomegranate and the guinea because they strengthen the stomach as well as the liver; but cold water must be eschewed; as it harms a person with dropsy and it also does the same to any person who is suffering from ulcers in the belly. It ought never to be drunk by any person that is badly fatigued as it makes the liver cold with

a cold that turns to dropsy

At page 62 he devotes a couple of paragraphs to rupture describing a scrotal hernia as a lesion made through a cleft in the body that permits of a mass passing through that goes back when one lies on his back and puts steady pressure upon the protrusion till it slips back into its place and leaves the body with external evenness; although with an open passage where a depression can be felt. Such a passage, he goes on to say, is a rupture while the mass, that passes through the rupture and makes its way down into the scrotum, where it lies beside the testicles, is called a hernia.

Continuing his description he says that the hernia may swell up the skin round the testicles and there may be a great deal of movement - inside just as if there was a heavy load inside and this is due to the filling up of the mass with food or from the bringing down more through coughing or by having sexual intercourse while

part is falling up. A loud outcry may bring it down or even through the wind inside cutting off a portion of the bowel from the vein where the intestines meet.

On the other hand a hernia may not protrude farther than the opening in the body; but then it will spread out under the skin and probably give rise to a great deal of pain when it will be necessary for the patient to have a bandage bound tightly over the opening in the body guarding it properly and bandaging from below upwards.

In this form of rupture it is also necessary to be on one's guard against taking ^{much} food or drinking cold water. The sufferer ought also always to wear a compress with a properly fitted bandage as otherwise the hernia will increase in size and give rise to greater pain.

Then after partaking food the patient must remain quiet and when partaking food he must guard against such articles of diet as beans and lentils.

Should the hernia not return easily to its place the patient must immerse his whole body in water so as to soften the tissues round the belly and especially those parts through which the hernia has come; using frankincense to soften the bowels and for lessening the contents of the rupture by causing the mass to move from its place by means of dysentery (!!) with evacuation of the excrement while taking for nourishment leavened wheat; Clarified butter and ordinary butter; but God knows all".

At page 63 the same writer begins a chapter that deals with Oculitis and with ulcers of the Scrotum saying:— When goats-dung is burnt and its ashes are bound tightly ^{around} the testicle they act as an antidote to the disease in cases of Oculitis; but if there is great heat along with the swelling then pounded myrtle leaves mixed with oil and urine are to be applied with a tight bandage and Zinc Sulphate is also good, should there be

a tendency to ulceration and especially if the parts are seen to be markedly red. Then however Zinc Sulphate mixed with vinegar is most beneficial.

Flour that has been prepared from the leaves of the Marsh Mallow when mixed with an equal quantity of the flour of date stones and kneaded together with vinegar will both cool and lessen the swelling, when applied to an orchitis that has baffled the skill of many doctors.

Oil of roses mixed with Marjoram and the pulp of raisins will remove both the heat and the swelling, so long as this concoction is mixed with vinegar; but if cheese be bound round any hot-swollen testicle it will lessen its size and take away its heat.

Milk is a real antidote for all ulcers of the scrotum and can be applied to all swellings and ulcers coming from an ~~abundant~~ abundance of biting moisture.

Zaad Al. Masapi holds, however, that

a mixture of gall nuts - and alum, after being thoroughly pounded together into a very fine powder, should be sprinkled over all testicular wounds.

At page 71 the writer gives the following description of an eye-salve that will sharpen weak eyesight and be good for the preservation of those, whose eyesight is still unimpaired.

Take, he says, a dirhem of gold a dirhem of what falls off from the heated silver when it has cooled down, a dirhem of pearls, a dirhem of Socotrin myrrh, a dirhem of white sugar, a dirhem of ~~red~~ musk, and a dirhem of Camphor. Then mix these properly and pound them together so as to form an extremely fine powder then use a fine stone to apply thy collyrium to the eyes for it is a well-proved remedy.

At page 89 the writer says that Sheep's milk increases the brain power and also the spinal marrow. It is also a medicine for forgetfulness as well as for cases

of perplexity. Its benefit is however most marked when it is drunk along with Cinnamon.

Mohammed however once said that if one wished to have a good memory he ought to eat honey and in the Kitab El-Birkat it is said that even the washing of the head assists memory.

On the other hand it is commonly believed that the eating of onions in great quantity corrupts the memory and brings on forgetfulness and so does the eating of too much dry bread: while the eating of opium destroys the memory and darkens the understanding; but God knows best.

The writer of El-Birkat truly says Our Lord Mohammed declared that Religion is the most important of all things while among those things that give most pain are the things that affect the eyes and he goes on to say that the one who applies a Collyrium with a Collyrium Stile on the tenth day of

Mocharum does not ever suffer from his eyes.

There is also another unauthenticated tradition told of Mohammed the Apostle of God which is to the following effect. "Once he said: "Do not-dislike four things viz: - Inflammation of the eyes for it-puts-an end to blindness, Catarrh for it-puts-an end to Elephantiasis, Confusing for it-puts-an end to palsy or boils because they put-an end to the roots-of Leprosy

Continuing this subject- Sheikh Ibrahim says I saw in a book by Ali bin Isa the eye doctor that he said:- Restrain him that hath inflammation of the eyes from Coarse, bad food as well as from Sexual intercourse and from the gorging of food, from drinking too much water and from every sort of noise. Do not-let him turn on his face as that helps to produce the matter in the eye. You must-also keep him from vomiting and make him sleep

on his back with his head well raised up. So high in fact - as to make it - appear like as if he were merely leaning on his back to rest it.

Let nothing come near the eye at the beginning of a disease; although blood letting may be good, should signs of the presence of blood be discovered.

During the whole of the time that the eye is inflamed you must guard against everything that would be hurtful thereto but especially against - smoke, dust, and a bright light.

Such a patient - ought - also to avoid eating onions, leeks, and garlic. He must also keep away from all sorts of milk; but ~~avoid~~ above all else he must keep away from sexual intercourse.

Should however the pain in the eye be very severe it can be lessened and quieted by smearing the eye with Opium.

Conjunctivitis according to this writer may be cured by applying a mixture of

human milk and Shehri frankincense; but even when the milk itself is dropped into the eye warm and direct from a woman's breast it causes the dimness of vision to disappear.

At the beginning of a chapter devoted to whiteness in the eye he says that Er-Rahuni in his book declares that whiteness in the eye is due to a white liquid coming down from the brain and that this liquid is of eleven different kinds and may be likened to the air, to the colour of the sky, and may be green, blue, yellow, the colour of gypsum, or black. It may have the appearance of quicksilver as it shakes, be like mercury when brought into contact with the glass which the glass merchant- (?barometer maker) fills with it. But this liquid may also have the colour of iron be lead coloured or even black.

Among the signs that precede corrosion of the cornea are:— The patient

Sees the light of the sun and the light of a lamp in a dimmer and far more obscure way than a person can do who has a healthy eye. Nevertheless if the pupil contracts and grows wide that is a good sign; but if the pupil does not move when the other eye is closed then it is not good and real corrosion is taking place.

Again if you press the eye with your hand repeatedly and watch the pupil you will be able to see whether or not the moisture is arrested (i.e. not externally seen) and is spreading beneath. Then if this be the case the proper treatment is to incise the part and let out the matter; but an incision is not good if the pupil be small and there is no coagulation of the humors as it is getting the better of the process of corrosion.

Should however there be a softness in the eye before consolidation, the corrosion may return so quickly that it will cause a perforation to take place especially when

There is repletion and a corruption of the humors of the body or the patient may have a cough, a headache or a Catarrh which will injure the eye, unless speedily relieved.

Then however great care must be taken; as the most harmful things to come into contact with the eye are Cold eyewashes and especially the Stone that is used for applying the Collyrium; as these congeal the liquid and enable the disease to get a firmer hold.

In such a case an incision ought to be made in the cornea but this should only be undertaken by a skilful surgeon.

At page 114 the writer devotes a section of his book to the cure of coughs and colds. He begins by saying: The writer of Kitab Er-Rahma says The cough is moist when it is accompanied by a throbbing and when it is caused by an excess of the humors of the phlegm collected in the lung.

For this the proper treatment is:-
 Into one pound of honey that has been
 put into a vessel and placed on a low
 fire you must throw a dirhem of frankincense
 and a dirhem of mastic; then the mixture
 requires to be stirred till the frankincense
 and mastic are wholly dissolved after
 which the vessel must be removed from
 the fire; but before the mass, in cooling,
 has been allowed to grow firm you must
 knead it into a smooth dough and
 while doing so mix it with a dirhem
 of each of the following materials after
 they have been thoroughly pounded and
 mixed as one viz:- dried coriander seeds,
 dried fennel seeds, dry ginger, and dried pepper.

A little of this is to be used before
 every meal and at bed time too if the
 cough be troublesome.

The only nourishment that the patient
 ought to take while his cough is troublesome
 is peppered rice and honey.

Then the writer goes on to add "As

This is a really good antidote for a cough: everything else ought to be avoided."

In the Section on fevers he says:—

Know that the fevers are many but we shall only mention four of them that differ greatly according to the excess of humors.

The first is the Tertian fever which absents itself for one day and comes on the following day. It is caused by an excess of bile and the proper treatment for it is as follows:— make the patient vomit and to drink plenty of lime water and sugar. For nourishment the patient must take Chicken broth and other easily digestible food.

The second fever is the Interdian and this comes on every day. Its cause is the humor of the blood and its treatment consists in drinking vinegar and in eating Yeasted corn for three days. Then if the patient is not better he ought to be cupped.

The third is a continued fever lasting

night and day and it is that which is inside of the belly but it may be in the back causing headache; for although the skin may be cold there will be a hidden boiling which will last for seven days. Then it makes an assault with heat like fire that seems to burn up the whole body till the brain itself becomes hot with an excessive heat and the mind wanders till there is marked delirious speech accompanying the unconsciousness.

After these symptoms there comes a crisis accompanied by copious sweating and the fever ends in recovery or in death according to the severity of the symptoms.

The treatment in such cases is vinegar and honey, while the proper nourishment to give in this kind of fever is fine barley flour with sugar and chicken broth.

The fourth sort of fever is called *Quartan* as it goes away for two

days and then returns for one day continuing thus until it is finally expelled. This fever always begins with a gentle heat that gradually increases till it is extremely severe and the body feels just as if it were being pricked with needles then sweating comes on and lasts for a very long time. It is a safer fever than any of the others but it is hard to expel it from the System.

Treatment- Seeing that this fever is caused by a humor of the Spleen that is cold, and dry, and lies concealed in the belly, the proper treatment is to drink cow's milk, from which all the butter has been removed, or the patient may drink milk as it comes fresh from the udder; avoiding everything else.

When the fever begins one ought to drink plenty of hot water as hot as it can be taken, while sipping

it as this is good

Later on in the book he says that "Mohammed the apostle of God" once declared that fever was a bit of hell and ought to be extinguished with cold water. (? Had he the modern cold bath in his mind's eye)

Now as the book from which these quotations ^{are taken} in the book with the greatest sale in Aden: being practically the only medical book in ~~Aden~~ Arabic that is sold in Aden I have been surprised at seeing how seldom the Actual Caution is mentioned as a mode of treatment. Nevertheless in speaking of Melancholia the writer advocates its use saying:— Large Caution marks are to be made over the brain, while the patient is kept in a close room well guarded from the air and from noise.

Throughout the greater part of South Arabia; but especially in the Aden hinterland the actual Caution is the last resort in every form of

disease while in many places especially in small villages it is used for even the most trivial complaints - so that in many villages you could not get a single man, woman, or child above 7 years of age that has not been cauterized for some complaint or another with the result that keloids, which often grow to an enormous size, are extremely common.

In using the actual cautery different practitioners use it in very different ways. Some apply the cautery to the actual seat of the pain or directly over the lesion as in cases of hernia which, as already indicated, are often covered with actual cautery marks. Others however declare that the seat of pain ought never to be touched; and these spread cautery marks over the abdomen carefully avoiding the painful spot - Others again cauterize the both sides of the spinal column especially in

Such cases as paraplegia. Some again apply the red hor-vion to the back of the neck while others show a marked preference for the lower limbs, ankles, and feet; but in the case of ophthalmia or any other disease of the testicles it is the little toe, on the opposite side from the affected organ, that is cauterized.

Next to the use of the actual cautery comes the horn for cupping.

Many Arabs are cupped regularly once a month and imagine all sorts of evil if they pass the regular day without having their blood taken.

So common is this practice that I have seen people at death's door from Anaemia being cupped in order to cure their weakness.

Now the modus operandi for using the cup is this:— The operator takes a horn cut to a suitable size then he cuts off the sharp end leaving a small hole that passes into the body of the cup, then

he takes a piece of mastic in his mouth which when sufficiently pliable he turns to the side and sucks out all the air that he can out of the horn; then he skillfully places the mastic over the hole with his tongue and when enough air has been abstracted the mastic ^{presents} covering the entrance of the air and the flattening out of the cupped swelling thus made.

Couching for Cataract - is still practised most extensively in South Arabia. The patient is made to lie down in a place where there is a good light - and the Hakeem then passes a gold needle through the Sclerotic and in front of the Cataractous lens, behind the iris then he depresses the point of the needle breaking through the Capsular ligaments and causing the mass to sink into the vitreous where for a time it lies apparently inactive and many people have fairly good vision for a considerable time after the operation, although it

usually happens that in the end the lens acts as a foreign body, sets up inflammation and the eye is ultimately destroyed.

Of course in every Mohammedan country the art of Circumcision is practised; but it is in the Maidie Wady that this operation is practised in a way ^{that is} not even seen outside of that particular province.

In fact as practised in that part of Arabia the operation ought not to be called Circumcision at all; for it is not the foreskin only that is removed but the whole of the outer covering of the pubis and of the penis and as it is not performed till after puberty the operation is both painful and dangerous, especially as the Knife used is not such a delicate instrument as a Surgeon's would be in any European hospital.

In this case the operator draws his Knife along the upper surface of the pubes and cuts away all the hair

Covered skin down on both sides to the root of the penis when he turns the skin outside in and draws it off the male organ like a glove that sticks to the finger consequently the urethra is often perforated and sometimes the fistula thus formed is nearly an inch long: ~~as~~ the whole of the under side of the urethra having been removed ^{for that distance} thus rendering the man's penis useless as an organ of generation and sometimes even of micturition. So we often get men down from the Haidee country ^{seeking operations in order to remedy} both for this complaint and for "stone" which is extremely common in that part of Arabia.

Then, as there are no properly trained midwives in South Arabia, we often get cases of vesico-vaginal fistulae in for operation as no catheter has ever been passed and possibly no purgative given before the birth took place; so cases are more complicated still through there being both a ruptured bladder and a ruptured

rectum which the native midwives fill with Salt- and leave for nature to granulate with the result that- on examining the parts- one finds a hard mass made up of granulation tissue that has all to be cut- away before the parts- can be made to resemble a normal vagina.

In some places inoculation is still practised for Small pox but vaccination is gradually taking its place although outside of the British protectorate the side ^{chose} both for inoculation and vaccination is the leg

I cannot conclude this paper without mentioning the Arab method of dealing with theft- and without describing the trial by ordeal as a means of detecting thieves and curing them of their peccant- desires.

The trial by ordeal is still common throughout- Arabia; but this trial is conducted in many different- ways. One is by giving the suspected person dry bread to eat upon which a charm has been written. At

the same time as the suspected one is given the bread like portions are handed to "Control" cases when it is usually found that the guilty person is unable to masticate and swallow ^{dry bread} like the others.

^{Seeing} ~~too~~ however ^{that} the most common method of trial by ordeal is "to lick the fire" I shall try to describe it as minutely as I can although I am by no means certain that, in the cases I saw, the Sheikh, who was trying the cases, did not allow the iron to rest longer on the suspected man's tongue than he did upon the control cases; but as I had not a stop watch I could not be certain about this ~~but~~ At any rate none of the accused repudiated his judgment, although had they not got off with a fine they might have done so. Still as, it is a well known physiological fact that, fear of detection combined with a consciousness of guilt often do dry up the delinquents' saliva; it probably is the case that the judge only furnishes the guilty although sheer terror at the

thought of pain might cause even an innocent person to be punished.

The Sheikh who is to try the case takes a large iron rod with a ~~large~~ ^{dish} flattened out ~~piece~~ at the end, ^{which is} a little larger than a penny and he places it in a fire taking care that it is made red hot before it is used. Then while it is being heated the Sheikh seven times repeats the opening Sura or Chapter of the Coran the audience joining in the repetition (Bi-smi Allah Ar-Rahman Ar-Rahim =) In the name of God the merciful the Compassionate &c. the whole of the Sura being repeated. Then the Sheikh who is trying the case goes on to recite this spell; but keeps his eyes on the accused as he does so or only glances away in order to come back with a swift glance so as to catch him off his guard:-

In the name of God the merciful the Compassionate, King of the day of judgment O fire! O Storehouse! O hiding place I have charmed thee by the quenching

Spells of the Meccan Well and by the Solid
 built-Kasba let true judgment be given.
 O Iron hearted hasten both the burning and
 the blessing. O fire we have brought
 those near in order to outwit the raging
 cause of grief. Destroy him. Withen his
 lips. Recover his forgetfulness. God himself
 has made room for thee. To those who are
 peaceable give peace. Do not wrong the
 innocent ones: the persecuted of God. Be to
 them as the fire was to Ibrahim, the friend
 of the Compassionate. Be cold and safe when
 anyone has planned a trick against the innocent.

When the disc has been thoroughly
 heated through every part the Sheikh takes
 it out of the fire while all the time
 continuing his discourse about the evils
 of Keff- and the impossibility of escaping
 the detecting eye of God and so passing the
 ordeal. He then turns up his own foot-
 slaps it down on the upturned heel ^{for a second}
 then ^{he} places the disc on the tongue of the
 suspected persons ^{and the control one} in steady but not in

quick succession. Then each of the persons suspected and ^{the} control cases, are given a glass of cold water and they are told to look at one another's tongues. Then a mirror is given to each and they are told to look at their own tongues and the one whose tongue is singed through there being a lack of saliva is led out to the Cadhi or Sheikh that punishes such cases.

Now it is possible that this judge may only order restoration of the object and a heavy fine or he may order the felon's right hand to be cut off when a slave kept for that purpose will tie a cord tightly round his wrist then lay it on a block and cut it off with a sudden blow or more leisurely remove the hand at the joint after which he dips the stump into a pot of boiling tar to stop the bleeding and prevent blood poisoning with the result that often the man finds his way down to the mission doctor with a putrid stump that requires treatment.

I am glad to say that in areas protected by Britain this practice has lately been abolished in response to the petitions sent in by medical missionaries.

In some places however the Sheikh orders the culprit to be sewed up in a bag and cast, with heavy stones in the bag, into the sea. A form of punishment that is by no means uncommon among the tribes East of Aden when the criminal does not belong to a family Arab family or has no rich relations to take his part.

John C. Young M.D., F.R.C.S.

Sheikh Ofman

Aden